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A study on the genus *Cerataphis* Lichtenstein from China with the description of one new species (Homoptera：Hormaphididae)

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Abstract: The genus *Cerataphis* Lichtenstein from China is studied with one species，*C*. *parsitica* Qiao *et* Zhang described as new to science. Eight morphological features are figured and a key to the species from China is provided. Embryological characters of the genus are described for the first time.

Key words: Homoptera；Aphidoidea；Hormaphididae；*Cerataphis*；new species；China

Signoret[1] first described the genus *Boisduvalia* in Aleyrodidae with *Coccus lataniae* as the type；the genus was then mored to Coccidae which being a genus in Diptera，the name was not valid[2]. As a result，the generic name *Cerataphis* proposed by Lichtenstein[3] was accepted and being recognized. A total of 12 species listed by Eastop and Hille Ris Lambers[4] in the genus，of which seven are considered as valid species. Noordam[5] described one species from Java. Which brings total 8 species. In the paper，one new species，*Cerataphis parsitica* Qiao *et* Zhang was described form China，and embryological characteristics of the genus and key to the species from China are provided. All specimens including type are deposited in Institute of Zoology，Chinese Academy of Sciences.

The specimens studied in the paper are collected by ZHONG Tie-sen in Hainan Province（Lingshui County，Ledong County，Xinglong County），China. The unit of measurements is in millimeter（mm）. The special terms in Ghosh[6] are followed in this paper.

Cerataphis Lichtenstein，1882

Cerataphis Lichtenstein，1882，Bull. Soc. Entomol. Fr.，2：74～75.

Synonyms：*Asterolecanium* Westwood，1897，Gardener's Chronicle，3（12）：797.

Boisduvallia Signoret，1868，Annis. Soc. Entomol. Fr.，4：8.

Type-species：*Coccus lataniae* Boisduval.

Apterae usually dark，flattened，aledrodiform；head fused only with prothorax or with entire thorax，abdominal segments Ⅰ～Ⅶ fused，segment Ⅷ free. Body in apterae crenulated with single row of wax glands on the margin up to tergite Ⅶ and similar ones over the entire width of tergite Ⅷ；front with a pair

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of pointed horns. Alatae without crenulations or horns but sometimes in alatae nymphs horns and wax glands present，occasionally. Eyes 3 facets. Antennae normally 5-segmented，sometimes 4-segmented in apterae，hardly one third of body，secondary rhinaria in alatae annular; primary rhinaria round，finely ciliated，processus terminalis very short. Antennal hairs fine，sparse and short. Rostrum hardly reaching mid-coxae，ultimate rostral segment short，blunt，without accessory hairs. Dorsal hairs normally fine，but in apterae cephalic hairs often spine-like，with conspicuous tubercular bases. Dorsum in apterae often dark and rugose. Abdomen with only 6 pairs of spiracles，those on segment Ⅰ. Abdominal tergite Ⅷ with 4 ~ 10 hairs. Siphunculi ring-like，surrounded by few hairs. Cauda slightly constructed at base，with 4 ~ 17 hairs. Anal plate weakly or distinctly bilobed in normal alatae，with 12 ~ 16 hairs on each lobe. Genital plate with 18 ~ 22 hairs，6 ~ 8 anterior hairs among them. Legs short，smooth in apterae，trochanters often fused with femora; first tarsal segments chaetotaxy: 3 or 4，3 or 4，2; dorso-apical hairs on second tarsal segments and ampodial hairs long，funnel-shaped at apices. Fore wings with media once branched; hind wings with two obliques.

Embryo Dorsal hairs short and pointed. Head with 2 pairs of cephalic hairs，1 pair of spinal，1 pair of pleural and 1 pair of marginal hairs，spinal hairs on posterior part of dorsum of head，the distinct between two spinal hairs near. Pronutum with 1 pair of spinal，2 pairs of marginal hairs; mesonotum and metanotum each with 1 pair of spinal，1 pair of pleural and 2 pairs of marginal hairs. Abdominal tergites Ⅰ ~ Ⅴ each with 1 pair of spinal，1 pair of pleural and 1 pair of marginal hairs，tergites Ⅵ ~ Ⅶ each with 1 pair of spinal and 1 pair of marginal hairs，tergite Ⅷ with 1 pair of spinal hairs. Eyes 3 facets. Antennae 4-segmented. Ultimate rostral segment wedge-shaped. Tarsi normally developed and segmented. Siphunculi invisible.

Host-plants primary hosts: Styracaceae，*Styrax* spp.; secondary hosts: Gramineae，Palmaceae，Liliaceae and Ceyclanthaceae.

Distribution China: Hainan，Taiwan; India，Sri Lanka，Cambodia，Malaysia，Indonesia; possibly introduced to Australia，Africa，Europe，North America，South America[1~3,5,6].

Key to species of *Cerataphis* from China

Apterous viviparous females

Body brown in life. Abdominal tergite Ⅰ with 7 hairs; tergite Ⅷ with 10 hairs，length of dorsal hairs on tergite Ⅷ 4.00 times as long as widest diameter of antennal segment Ⅲ. Ultimate rostral segment as long as second hind tarsal segment. Siphunculi not surrounded by short haris ································ ***parsitica* Qiao *et* Zhang**

Black brown in life. Abdominal tergite Ⅰ with 11 hairs; tergite Ⅷ with 2 hairs，length of dorsal hairs on tergite Ⅷ 1.00 time as long as widest diameter of antennal segment Ⅲ. Ultimate rostral segment 0.58 time as long as second hind tarsal segment. Siphunculi surrounded by 3 or 4 short hairs ··············· ***lataniae* (Boisduval)**

Cerataphis lataniae (Boisduval，1867)

Coccus lataniae Boisduval，1867，Essai. Entomol. Hort.，Paris，355.

Aphis palmae Baehr，1908，Zool. Anz.，33：507～517.

Embryo（the description of new form）　Body oval，0.577 in length，0.309 in width. Dorsal hairs of body short and pointed. Head with 2 pairs of of cephalic hairs，1 pair of spinal，1 pair of pleural and 1 pair of marginal hairs，spinal hairs on posterior part of dorsum of head，the distinct between two spinal hairs near. Pronotum with 1 pair of spinal and 2 pairs of marginal hairs；mesonotum and metanotum each with 1 pair of spinal，1 pair of pleural and 2 hairs of marginal hairs. Abdominal tergites Ⅰ～Ⅴ each with 1 pair of spinal，1 pair of pleural and 1 pair of marginal hairs，tergites Ⅵ～Ⅶ each with 1 pair of spinal and 1 pair of marginal hairs，tergite Ⅷ with 1 pair of spinal hairs. Eyes 3 facets. Antennae 4-segmented，segments Ⅲ～Ⅳ transverse spinulose，0.227，0.39 time as long as body；length of segment Ⅲ 0.072，length in proportion of segments Ⅰ～Ⅳ：57，43，100，71+43. Antennal segments Ⅰ～Ⅳ each with 1，2，2，2+4 hairs，respectively. Primary rhinaria small and round. Rostrum reaching abdominal segment Ⅰ，ultimate rostral segment 0.046，1.50 times as long as basal width of segment，0.90 time as long as second hind tarsal segment；segment Ⅳ with 3 pairs of hairs，accessory hair absent. Tarsi normally developed，segmented. First tarsal segments chaetotaxy：2，2，2. Length of second hind tarsal segment 0.052. Siphunculi invisible.

Host-plants　*Cocos nucifera*，*Latania* sp.，*Poa* sp.，*Pothos repens*.

Distribution　China：Hainan Province（Ledong County 500 m，No. 7862；Xinglong County 500 m[1～3,5,6]，No. 7844；Taiwan）；India，Malaysia，Java，England，American.

Cerataphis parsitica Qiao *et* Zhang，sp. nov.（Figs. 1～8）

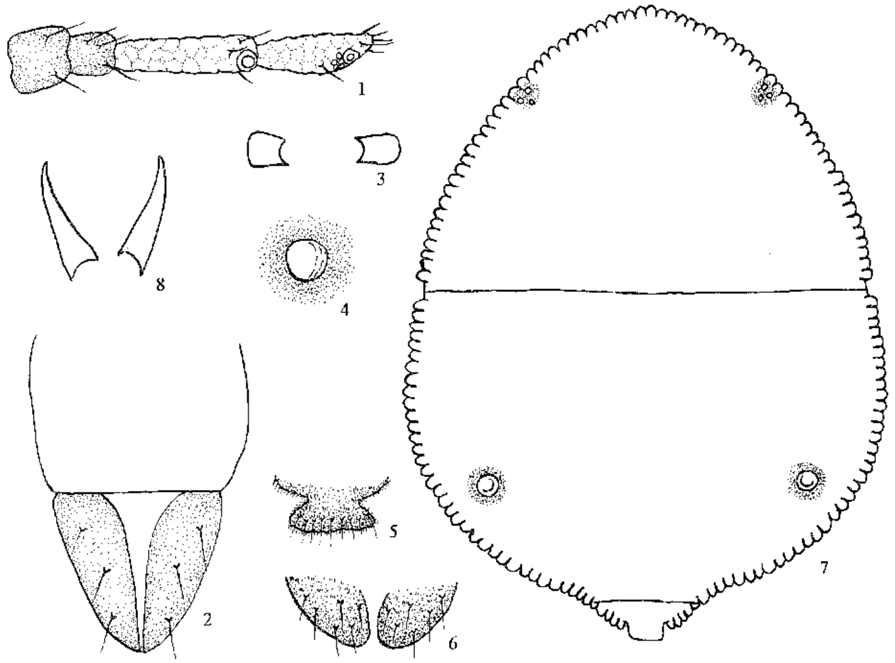
Apterous viviparous females　Body oval，brown in life，margin areas of body covered with wax powers，not activity. Measurements：Body 1.400 in length，1.050 in width. Antennae 0.335，length of segments Ⅰ～Ⅳ：0.052，0.041，0.134，0.087+0.021，respectively. Ultimate rostral segment 0.072 in length. Hind femur 0.206，hind tibia 0.268，second hind tarsal segment 0.072. Cauda 0.041 in length.

Mounted specimens　Body slightly sclerotic，crenulated long-oval single row of wax glands on margin of body. Head fused with thorax，abdominal segments Ⅰ～Ⅶ fused，tergite Ⅷ free. Antennae，legs and rostrum short. Eyes brown，3 facets. Mesosternal furca with two separated arms，length of single arm 0.031，1.50 times as long as basal width of segment，0.36 time as long as widest diameter of antennal segment Ⅲ. Spiracles oval and closed，spiraclar plates invisible. Dorsal hairs of body short. Head with 2 pairs of cephalic hairs，2 pairs of spinal，2 pairs of pleural and 1 pair of marginal hairs；pronotum with 6 hairs；abdominal tergite Ⅰ with 7 hairs，tergites Ⅱ～Ⅳ each 1 pair of marginal hairs，tergite Ⅶ with 2 pairs of hairs，tergite Ⅷ with 2 pairs of spinal and 3 pairs of marginal hairs. Length of cephalic hairs，marginal hairs on tergite Ⅰ and dorsal hairs on tergite Ⅶ 0.031，0.015，0.103，1.20 times，0.60 time，4.00 times as long as widest diameter of antennal segment Ⅲ，respectively. Head with 1 pair of horns，length of which 0.093，0.69 time as long as antennal segment Ⅲ，2.25 times as long as basal width of segment，smooth apparently and without hairs. Antennae 4-segmented，segments，Ⅲ～Ⅳ with retications，0.24 time as long as body，length in proportion of segments Ⅰ～Ⅳ：38，31，100，65+15，

processus terminalis 0.24 time as long as basal of segment; segments Ⅰ ~ Ⅳ each with 2, 3, 3, 1+0 hairs, respectively, apex of processus terminalis with 5 hairs; length of hairs on segment Ⅲ 0.021, 0.80 time as long as widest diameter of segment. Primary rhinaria small and round. Rostrum reaching mid-coxae, ultimater rostral segment 0.88 time as long as basal width of segment, as long as second hind tarsal segment; with 3 pairs of hairs, 2 pairs of accessory hairs among them. Legs short. Hind femur 1.54 times as long as antennal segment Ⅲ; hind tibia 0.19 time as long as body. Length of hairs on hind tibia 0.031, as long as middle width of segment. First tarsal segments chaetotaxy: 4, 3, 2. Siphunculi pore-like, apical diameter of siphunculi 0.031, 1.20 times as long as widest diameter of antennal segment Ⅲ. Cauda konbbed, constricted at base, length of which 0.40 time as long as basal width, with 9 hairs. Anal plate bilobed, each lobe with 6 thick, long and pointed hairs.

Holotype Apterous viviparous female, No. 7837-1-1-3, 1984-Ⅲ-13, Hainan Province (Lingshui County 1 000 m), by ZHONG Tie-sen, on an unknown plant; paratypes: 3 apterous viviparous females, No. 7837, other same as holotype.

This new species is closely related to *C. orchidearm* (Westwood), but differs from it in: length of cephalic hairs 1.20 times as long as widest diameter of antennal segment Ⅲ (the latter: 2.50 times); length of dorsal hairs on abdominal tergite Ⅷ 4.00 times as long as widest diameter of antennal segment Ⅲ (the latter: 1.90 times); antennal segment Ⅲ with 3 hairs (the latter: without hairs); ultimate rostral



Figs. 1~8 *Cerataphis parsitica* Qiao *et* Zhang, sp. nov. 寄坚蚜，新种

Apterous viviparous females: 1. antenna 触角; 2. ultimate rostral segment 喙端部; 3. mesosternal furca 中胸腹岔; 4. siphunculus 腹管; 5. cauda 尾片; 6. anal plate 尾板; 7. dorsal view of body 身体背面观; 8. horns 额角

segment with 2 pairs of accessory hairs (the latter: without accessory hairs); siphunculi not surrounded by hairs (the latter: 3 or 4 short hairs)[5].

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中国坚蚜属 *Cerataphis* 研究及新种记述
（同翅目：蚜总科，扁蚜科）

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摘要：研究了中国的坚蚜属 *Cerataphis* Lichtenstein，并记述了一个新种寄坚蚜 *Cerataphis parsitica* Qiao *et* Zhang。首次描述了该属的胚胎学特征，提供了 8 个形态特征图、寄主植物、地理分布以及中国坚蚜属的分种检索表。模式标本保存在中国科学院动物研究所。

关键词：同翅目；蚜总科；扁蚜科；坚蚜属；新种；中国

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寄坚蚜，新种 *Cerataphis parsitica* Qiao *et* Zhang，sp. nov.（图 1 ~ 8）

正模：无翅孤雌蚜，No. 7837-1-1-3，1984-Ⅲ-13，海南省（陵水吊罗山 1 000 m），钟铁森采集，寄主为一种寄生性植物；副模：3 只无翅孤雌蚜，No. 7837，其它同正模。

本新种与 *C. orchidearm*（Westwood）有较近的亲缘关系，不同在于：头顶毛长为触角节Ⅲ最宽直径的 1.20 倍（后者：2.50 倍）；腹部背片毛长为触角节Ⅲ最宽直径的 4.00 倍（后者：1.90 倍）；触角节Ⅲ有毛 3 根（后者：无毛）；喙节Ⅵ + Ⅴ有次生毛 2 对（后者：无次生毛）；腹管周围无毛环绕（后者：3 或 4 根毛环绕）。